

urged by this increased interest, and rendered necessary by the extraordinary modern progress of the science, is not behind the demand. That diverse tastes and capacities have to be catered for is clearly seen in the characters of the above books. The first, condensed, but logical and lucid, will appeal essentially to the lover of astronomy having a mind comparatively trained to precise thinking, while the second frankly provides for the reader who needs spoon-feeding, and likes printed talk.

(1) A simple account of the methods and results in astronomy, without unnecessary detail, and clearly stated for the student and general reader, is the aim and in great part the achievement of this handy little manual. Such faults as the book possesses spring mostly from a too great conciseness. In such subjects as the finding of the solar parallax and the estimation of the distance of the Milky Way, it is better to keep in mind the weaker brethren than the resolute student. Too great economy of words ceases to be a virtue. Jumps, however, requiring undue intellectual effort on the part of the reader are not of frequent occurrence, while the general precision and clarity are ample compensations.

The work is comprehensive in scope, embracing the ancient astronomy and its development through the Copernican system to the most modern outlook on the universe. Recent work on astrophysics, the more intimate study of suns, near and far, is effectively presented. Very few mistakes have been noticed, though what seems an erroneous inference from diagram lxxxiv. leads to the inversion of the relative masses of Sirius and its companion, while it might be inferred from a statement on p. 116 that a magnetic field is a property of all sun-spots. This certainly is not proven.

The reproductions are effective and well chosen, and the diagrams, while efficient, have a home-made look about them which is quite pleasant, though the practice of using Roman numerals to indicate them seems wholly without virtue. An efficient and tasteful binding and handy format are further recommendations for a remarkably cheap book.

(2) Though dealing somewhat discursively with such parts of astronomy as are of most popular appeal, the common sense and individuality of the writer prevent the treatment from becoming banal. To the man in the street interested in the phenomena of the skies, the book may be recommended, and he will no doubt read it with interest and profit. In great part the author restricts himself to the realm of naked-eye astronomy. Both the manner and matter and the definiteness with which the subject is treated suggest and encourage a practical acquaintance with the phenomena on the part of the reader. The earth and its movements, stars and planets, sun-spots and comets, and the changes of the moon are among the subjects informingly and chattily dealt with. A brightly and amusingly written chapter on astronomers and their work gives an excellent account of a much misunderstood profession. The inset reproductions are sufficiently good, but the general appearance of the book might certainly be improved.

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# MARINE BIOLOGICAL RESEARCH IN BRITISH SEAS.

- (1) *Bulletin Trimestrie: Conseil Permanent International pour l'Exploration de la Mer. Résumé des Observations sur le Plankton des Mers explorées par le Conseil pendant les Années, 1902-1908.* Edited by H. M. Kyle. Part i. Pp. xxxiv+79, and 10 plates. (Copenhagen: And. Fred Høst et Fils, 1910.)
- (2) *The Decapod Natantia of the Coasts of Ireland.* By Stanley M. Kemp. Scientific Investigations, 1908, Department of Agriculture and Technical Instruction for Ireland, Fisheries Branch. Pp. 190+23 plates. (Dublin: 1910.) Price 3s. 6d.
- (3) *Report of a Survey of the Trawling Grounds on the Coasts of Counties Down, Louth, Meath, and Dublin.* By E. W. L. Holt. Part I., Record of Fishing Operations. Scientific Investigations, 1909, No. 1, Department of Agriculture and Technical Instruction for Ireland. Pp. 538+2 plates. (Dublin: 1910.) Price 3s.

(1) IN 1908 the International Council resolved to prepare a report on the plankton work carried out by the countries participating in the international fisheries investigations, and the present bulletin contains the first instalment of this report. The bulletin begins with lists of the stations and times of investigation, and of the kinds of nets employed and the occasions on which they were worked. Special reports are then given, in which various specialists deal with the annual and seasonal abundance of the main groups of animal and plant organisms represented in the catches. The groups so far summarised are the Tintinnoidea, Halosphaera and Flagellates, Cladocera, Pteropoda, and Copepoda. Following these special reports are synoptical charts representing the abundance and seasonal distribution of the commoner species contained in the groups studied. The material thus summarised is very considerable; 332 stations in all were worked, some 14,000 hauls were made, and altogether about 800 species of planktonic organisms were identified. It is evident, however, that the deduction of general results from this mass of material has been a difficult task. The coordination of the observations has been imperfect from the first; many changes have been made, and there has been confusion in the choice of methods of investigation. Nevertheless the results obtained are of very great value, and general facts of distribution in relation to the physical changes taking place in the sea emerge clearly from the study of the data. The report provides a concise and valuable summary of this extensive investigation.

(2) This is a minute and careful account of forty-seven species of decapod natant Crustacea (fifty-four in all are recorded from the entire British sea-area) collected by the Irish Fishery cruiser *Helga* off the coasts of Ireland, the main localities investigated being Rathlin Deep, the Irish Sea between Dublin and the Isle of Man, the deep water of Counties Cork and Kerry, and the region near the Porcupine Bank. The report, which is a valuable addition to our knowledge of the British marine fauna, includes full details of

the localities fished, as well as the physical conditions of the sea during the operations. The economic aspect of the research is not neglected.

(3) This is the first instalment of the results of an extensive survey of the Irish fishing-grounds, which is now being carried on by Mr. Holt and his colleagues. It is well known to those engaged in actual fishery administration that mere statistics of the quantities of fish landed at the ports afford, in themselves, information of very little value for a rational regulation of the industry. Fishery authorities competent to their work must obviously obtain at first hand a knowledge of the natural conditions of the sea areas under their control, and this has been the object of the Irish survey. The observations recorded are those of fishing operations carried on by the cruiser *Helga* at such times as her attention was not being directed to the detection of predatory trawlers; they include lists of the fishes present on the fishing-grounds visited, with the numbers taken per haul, and the individual measurements of those caught. It is quite impossible to summarise the results here stated, but one may say with confidence that the report is a contribution of essential value for a real understanding of the natural conditions of the British fisheries. J. J.

#### OUR BOOK SHELF.

*Science in Modern Life.* Prepared under the editorship of J. R. Ainsworth Davis. Vol vi., Engineering. By J. W. French. Pp. vi+225. (London: The Gresham Publishing Co., 1910.) Price 6s. net.

THE first half of this book is devoted to the various systems of power production, and the other half to the application of such power to the manifold needs of mankind; there is also a short account of the properties of, and the modern methods of manufacturing on a large scale, the chief materials used in constructional work.

In a book of this nature, which is evidently intended to give non-technical readers an intelligent idea of the remarkable work done by the engineer in providing for the varied daily needs of communities living under the complex conditions of civilised life, it is a pity that space should have been given to descriptions of machines and methods which are obsolete, and are only interesting from the historical point of view. In dealing with high-speed engines, there are two illustrations and some amount of letterpress devoted to the Willans and Robinson central valve engine, which is no longer made, though, of course, such engines are still to be found in generating stations and factories where they were installed some years ago, and where they will remain until unfit for further service; it is, however, an obsolete type. In discussing water-tube boilers Mr. French states that "of these types the most extensively adopted in the navies of the world is the Belleville water-tube boiler." This is incorrect; no recent British warship has been fitted with this steam generator, which did not prove altogether satisfactory.

That the section which deals with the applications of power is well up to date is shown by the chapter dealing with aerial navigation and hydroplanes. The latest types of machines are described and discussed. The cable-way illustrated on p. 127 was used in connection with the building of the new low-level light-house at Beachy Head, and not, as stated, for the Eddystone Lighthouse.

There are a dozen excellent plates, and about 600

other illustrations, which will greatly increase the utility of the book to those readers who are not familiar with such technical matters. T. H. B.

*Vegetationsbilder.* Edited by Prof. Dr. G. Karsten and Prof. Dr. H. Schenck. Eighth series. Part 1. Trockensteppen der Kalahari. F. Seiner. Part 2. Von den Juan Fernandez Inseln. Carl Skottberg. Part 3. Die schwäbische Alp. Otto Feucht. Part 4. Aus Bosnien und der Herzegovina. L. Adamovič. Parts 5-6. Die Flora von Irland. Prof. T. Johnson. With six plates in each part. (Jena: Gustav Fischer, 1910.) Price 4 marks each part.

THE eighth series has progressed rapidly, as six parts have been published within the year. For the first time the British Islands is represented, namely, in the double part dealing with the flora of Ireland, arranged by Prof. Johnson. It would be difficult to improve on the subjects chosen, which include *Arbutus unedo*, one of the original forest trees, *Erica mackaii*, *Erica mediterranea*, *Daboecia polifolia*, *Euphorbia hibernica*, *Eriocaulon articulatum*, and *Eryngium maritimum*. All the photographs are excellent, and the number takes rank among the best. European countries are also represented in the pictures of the plant associations of Bosnia and Herzegovina, contributed by Prof. L. Adamovič, and those illustrating the Swabian Alps, provided by Mr. O. Feucht. Naturally the magnificent spruce, *Picea omorika*, endemic to Bosnia, is selected by Prof. Adamovič for illustration, and another subject is *Pinus leucodermis*; other photographs portray associations on the chalk, serpentine, and screes. The slopes and cliffs of the Swabian Jura are rich in calcicolous plants, of which *Saxifraga aizoon* and *Saxifraga decipiens* are two of the most prominent; the illustrations of *Laserpitium Siler* and of Juniper trees about eight feet high also attract attention. The part devoted to the Kalahari desert contains photographs of the well-known trees *Copaifera mopane*, *Copaifera coleosperma*, *Kigelia pinnata*, and *Acacia haematoxylon*, in their natural habitats; a remarkable large shrub, *Sesothamnus Seineri*, discovered by the author, presents striking xerophytic characters. Dr. C. Skottsberg illustrates a number of endemic plants. *Boehmeria excelsa*, a tree growing to a height of eighteen feet, *Juania australis*, a pinnate-leaved palm, *Gunnera palmata*, and a strong root-climbing fern, *Arthropteris altescendens*, are confined to the island of Masatierra; scenes from the island of Masafuera show forest of *Myrceugenia Schultzei* and the tree fern, *Dicksonia berteriana*.

*Light Visible and Invisible.* By Silvanus P. Thompson, F.R.S. Second edition, enlarged. Pp. xiii+382. (London: Macmillan and Co., Ltd., 1910.) Price 6s. net.

THE first edition of Prof. Thompson's popular book was reviewed at length in NATURE of March 31, 1898 (vol. lvii., p. 506). To the new edition have been added chapters on radium and the manufacture of light, the latter being the lecture given to a popular audience at the meeting of the British Association at York in 1906. We have little doubt that with these additions the volume will continue to be read widely.

*A Home-work Atlas of Maps in Black and White.* Edited by Prof. L. W. Lyde. Pp. 15. (London: A. and C. Black, 1910.) Price 1s.

THESE simple maps, showing in a striking way the essential facts of the geography of each of the continents, should prove of real use in schools to give pupils guidance as to how, when answering questions, long verbal descriptions may be saved by judicious diagrams.